

**CARTER, LEDYARD & MILBURN**

**MEMORANDUM**

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**To:** National Institute of Standards and Technology, 100 Bureau Street, Gaithersburg,  
MD 20899 Attn: Richard W Bukowski P.E.

W Gene Corley, P.E., Senior VP, Construction Technology Labs, 5420 Old Orchard  
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**From:** Robert R. Grew (Retired Partner)

**Subject:** WTC

**Date:** July 13, 2005

**Cc:** Raymond E Grew, P.E., 28124 Hamden Lane, Rancho Hidden Valley, Escondido, CA  
92026.

I am pleased to enclose comments dated July 2, 2002 from my brother, Ray Grew, on the  
article concerning the report by NIST on the World Trade Center which appeared in the *New  
York Times* on June 24, 2005 at page B-7.



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Bob

Refer to the page numbers on the copy.

1 Under what conditions? Of course he must mean under regular hazards and not fuel all over.

2 The building was a special light weight structure, how does this fit into the code? In this case the Port Authority could just do what they wanted to do not like a city approving the building drawings and specifications. I believe the City Council ruled that asbestos in the fireproofing could not be used.

3 It might be hard to get information on the code from experience on an building that might not have followed the current code in effect at the time.

4 This might bring up good information.

5 Freight or special elevator that the Firemen could take over in case of an emergency?

6 I believe a good part of codes are based on experience rather than research, however surely new methods developed over a period of time would be good. Effective separate exits always was in the code. Still a lightweight building structure that allows a maximum of outside rental space does not go with taking some of that space for non money producing space let alone the possibility of cutting off good outside views.

7 Glow in the dark might work but the normal system is emergency battery lighting that turns on with a power failure. Of course there is the cost and responsibility of maintaining the batteries

8 It is good that fireproofing be inspected, new construction and some damage could affect the fireproofing after the building has been occupied over a time. Adding a pipe has to have a hanger that can go through the fireproofing. Any connection from a pipe or electric conduit can be a conductor of heat to a structural member, how much? But not restoring the fireproofing after opening it up to mount pipe hanger has to be handled

9 If sheetrock walls were used more strength in the stairwell walls would help. But normal cinder block walls might not work with the light weight construction except in the center of the building. Rest areas, do not people have to get out of the building as fast as possible? Somehow handle the problem of handicapped people in the fireman's emergency elevator. It might get very involved for the fireman to know where the handicapped people are.

# Changes in the Construction of Tall Buildings? Experts Disagree

## Towers Should Have Had One More Staircase, Report Finds

By JIM DWYER

In its bluntest finding about shortcomings of the World Trade Center that may have contributed to the deaths on Sept. 11, a federal report said yesterday that the towers did not have enough staircases to meet New York City's building code. Each tower had three staircases, but should have had four to meet the city's code, the report stated.

The Port Authority of New York and New Jersey, which built and operated the towers, had long said while it was not bound by the code, it was committed to "meet or exceed" those standards.

Of the six staircases in the two buildings, five were destroyed outright by the impact of the planes. The sixth, in the south tower, survived at least partly intact and at least 18 people from the impact zone used it to escape.

In the north tower, however, no one above the 91st floor was able to get out, even though about 1,000 are likely to have survived the impact of the hijacked airplane.

The fourth staircase — had it been built, as the code required, and if it had been out of the path of destruction — presents the painful, tantalizing prospect that some of those people might have been able

to get out.

"If it had survived, at least partially, you might not have had everybody killed," said Richard W. Bukowski, a senior engineer with the National Institute of Standards and Technology. He led the investigation into the Port Authority's assertion that it had complied with building codes.

Mr. Bukowski noted that it was quite possible that a fourth staircase might have had the same immediate fate as most of the others, depending on where it was located.

The Port Authority maintains that the stairway was not required. "On the issue of the fourth stair-

case, we will respectfully disagree with the N.I.S.T. findings and maintain that we met the city building codes in this area," said Steve Coleman, an agency spokesman.

The report said the fourth staircase was required because Windows on the World, in the north tower, and the public observatory, in the south tower, had occupancy ratings of 1,000 people or more.

"If the building was built under the New York City building code, it would have required a fourth staircase," said Jennifer Givner, a spokeswoman for the city's Department of Buildings, endorsing the federal finding.

Ms. Lancaster said that the city was determined not to let reform efforts fall into a bureaucratic torpor, and that it had already adopted a number of the recommendations called for by the federal inquiry. These include such changes as reinforced walls for staircases and ele-

vators, more sprinklers, smoke control measures, and inspection of fireproofing. The question of expanding the width of staircases continues to be debated in New York because of cost concerns.

Dr. Corley, Mr. Baker and Dr. Barnett each agreed that many of the

National Fire Protection Association on high-rise safety, said that firefighters could provide powerful voices on the need for change, but that they are rarely involved.

The new standards will likely result in an immediate adjustment in the development of certain major skyscrapers, if they have not already been made. Mr. Baker, for example, is working on the structural design for the Trump Tower in Chicago. The Freedom Tower, which is to replace the World Trade Center, is also likely to integrate many of the recommendations, the engineers predicted.

The changes Mr. Baker is incorporating into these kinds of buildings include wider stairwells that have more robust walls, and refuge areas for the disabled to await assistance or for tired tenants to rest during an evacuation. He also is designing these towers with stronger connections between columns and beams, addressing one recommendation in yesterday's report.

"What we might do on a high-profile building or a building with special tenants is one thing," Mr. Baker said. "But if you want to do that in all tall buildings, I am not sure that is appropriate."

